

REMARKS

Claims 1 to 63 were pending in the application at the time of examination. The restriction requirement was made final. The rejection objected to the drawings and the specification. Claims 31 to 37 stand rejected under 35 U.S.C. § 101 as directed to non-statutory subject matter. Claims 1, 2, 4 to 6, 16, 17, 19 to 21, 31, 32, 34 to 36, 46, 47 and 49 to 51 stand rejected as anticipated. Claims 3, 7, 18, 22, 33, 37, 48 and 52 stand rejected as obvious. Claims 1 to 7, 16 to 22, 31 to 37 and 46 to 52 stand provisionally rejected for obviousness-type double patenting.

Election/Restriction

Applicant respectfully requests reconsideration and withdrawal of the final restriction requirement. Claim 8 in Group II, for example, recites a method of making, i.e., creating, an opcode value encoding scheme. Thus, the product made by Group II claims is an opcode value encoding scheme. Claim 1 in Group I is a method for using such a scheme, i.e.,

receiving an obfuscated application program, said obfuscated application program comprising at least one instruction opcode value encoded using one of a plurality of instruction set opcode value encoding schemes

Thus, the Group I claims recite a method of use of the results of the Group II claims, as originally stated, based upon nothing other than the plain meaning of the claims. Similarly, the Group III claims recite a structure that includes the results of the Group II claims. Therefore, when the claims are considered as a whole, the characterization as combination and subcombinations are directly contradicted by the claim language itself. At the very least, the Group I and Group II claims should be

considered. Applicant respectfully requests reconsideration and withdrawal of the restriction requirements.

Objections to the Drawings

Figure 1 was objected to because reference numerals 120, 115, and 140 were not mentioned in the description. Applicant has amended paragraph [0009] of the description to include reference numerals 120, 115, and 140 for the elements corresponding to those reference numerals in Fig. 1. Thus, the amendment to the description obtains correspondence between the description and Fig. 1. Applicant respectfully requests reconsideration and withdrawal of the objection to Fig. 1.

Figure 3 was objected to because reference numerals 325, 330, 335, 340, and 370 were not mentioned in the description. Applicant has amended paragraphs [0035] and [0039] of the description to include reference numerals 325, 330, 335, 340, and 370 for the elements corresponding to those in Fig. 3. With respect to reference numeral 325, the structure depicted in Fig. 3 was described in the description. Thus, the amendments to the description obtain correspondence between the description and Fig. 3. Applicant respectfully requests reconsideration and withdrawal of the objection to Fig. 3.

Figure 5B was objected to because reference numeral 510 was not mentioned in the description. Applicant has amended paragraph [0051] of the description to include reference numeral 510 for the element having that reference numeral in Fig. 5B. Applicant respectfully requests reconsideration and withdrawal of the objection to Fig. 5B.

Figure 2 is objected to because reference numeral 218 is used to designate both the "numeric keyboard" and the "alphanumeric keyboard." In the enclosed replacement sheet for Fig. 2, the reference numeral for the alphanumeric keyboard has been changed to "219" and a corresponding change made in paragraph [0032] to obtain correspondence

between the description and Fig. 2. Applicant respectfully requests entry of the replacement sheet as well as reconsideration and withdrawal of the objection to Fig. 2.

Response to Requirement to Review and Correct Drawings.

In Fig. 4, reference numeral 485 was used for both the "obfuscation descriptor" and the "virtual machine." In the enclosed replacement sheet for Fig. 4, the reference numeral for the virtual machine has been changed to "491" and corresponding changes made in paragraphs [0040], [0041] to obtain correspondence between the description and Fig. 4. Applicant respectfully requests entry of the replacement sheet.

Reference number 495 in paragraph [0043] was not shown in the drawings. Applicant respectfully notes that in Fig. 4, the virtual machine identifier is not shown as a separate element. Accordingly, reference numeral 495 was deleted in paragraph [0043] to obtain correspondence between the drawings and the specification.

Reference numerals 430, 435, 440, and 470 in Fig. 4 were not mentioned in the description. Applicant has amended paragraph [0043] of the description to include reference numerals 430, 435, 440, and 470 for the elements having those reference numerals in Fig. 4. In particular, a description was added based on the elements in Fig. 4 and the corresponding description for Fig. 3. Thus, the amendments to the description obtain correspondence between the description and Fig. 4 and do not constitute new matter.

Reference numeral 550 in Fig. 5C was not mentioned in the description. Applicant has amended paragraph [0052] of the description to include reference numeral 550 for the element having that reference numeral in Fig. 5C. In particular, a description was added based on the element in Fig. 5C. Thus, the amendment to the description obtains correspondence between the description and Fig. 5C and does not constitute new matter.

Reference numerals 3110 and 3114 in Figure 31 were not mentioned in the description. Applicant has amended paragraph [0106] and [0108] to correct typographical errors in the reference numerals so that reference numeral 3110 is included in the description and reference numeral 3114 is deleted. Thus, the amendments to the description obtain correspondence between the description and Fig. 31 and do not constitute new matter.

Reference numerals 3220 and 3250 in Figure 32 were not mentioned in the description. Applicant has amended paragraph [0113] of the description to include reference numerals 3220 and 3250 for the elements having those reference numerals in Fig. 32. The amendments to the description obtain correspondence between the description and Fig. 32 and do not constitute new matter.

Reference numerals 3610 and 3615 in Fig. 36 were not mentioned in the description. Applicant has submitted a replacement sheet for Fig. 36 in which reference numerals 3610 and 3615 have been removed. Fig. 36 does not include any information about these reference numerals and elements do not appear in the description that could be associated with these reference numerals. Thus, these reference numerals appear extraneous and so were deleted. Applicant respectfully requests entry of the replacement sheet with Fig. 36.

Objections to the Specification

Applicant has amended paragraphs [0001] to [0005] to remove the Attorney Docket Numbers and to properly reflect the status of the U.S. Patent Applications cited therein. Applicant respectfully requests reconsideration and withdrawal of the objection to paragraphs [0001] to [0005].

Applicant has amended paragraph [0017] to provide the term commonly associated with "ATM networks." Applicant respectfully requests reconsideration and withdrawal of the objection to paragraph [0017].

With respect to the objection to paragraph [0015], Applicant respectfully submits that the statement:

The process can be implemented as instructions executed by such hardware, hardware alone, or any combination thereof.

is correct and understandable. The statement indicates that the process can be implemented using code and hardware that executes that code, hardware that does not rely upon executing code, e.g., an ASIC, or a combination of the two. Such combinations are well known and so this statement is clear and understandable. Applicant respectfully requests reconsideration and withdrawal of the objection to this paragraph.

Applicant has amended paragraph [0036] to correct a typographical error.

Applicant has amended paragraph [0040] to correct the name of the element associated with reference numeral 482 to obtain correspondence between the drawings and the description.

Applicant has amended paragraph [0051] to correct a typographical error and thereby obtain correspondence between the drawings and the description.

Applicant has amended paragraph [0085] to correct a spelling error.

Applicant has amended paragraph [0086] to correct a typographical error and thereby obtain correspondence between the drawings and the description.

Applicant has amended paragraph [0094] to correct a typographical error and thereby obtain correspondence between the drawings and the description.

Applicant has amended paragraph [0096] to correct a typographical error and thereby obtain correspondence between the drawings and the description.

Applicant has amended paragraph [0098] to correct a typographical error and thereby obtain correspondence between the drawings and the description.

Applicant has amended paragraph [0101] to correct typographical errors and thereby obtain correspondence between the drawings and the description.

Applicant has amended paragraph [0125] to correct a typographical error and thereby obtain correspondence between the drawings and the description.

35 U.S.C. § 101 Rejections

Claims 31 to 37 stand rejected under 35 U.S.C. § 101 as directed to non-statutory subject matter. The rejection concludes that these claims are directed at software per se.

Applicant respectfully traverses the § 101 rejection of Claims 31 to 37. Applicant notes that Claims 31 to 37 are means plus functions claims that require a specific level of analysis in the claim interpretation, as put forth in the MPEP. Further, software alone cannot accomplish anything and so interpreting the claims as software ignores explicit claim limitations and indicates that the claims were considered in a vacuum and not as required by the MPEP. Applicant points out the following facts to maintain the issues for appeal should that be necessary. First, with respect to claim interpretation in general, the MPEP requires:

*>USPTO< personnel must first determine the scope of a claim by thoroughly analyzing the language of the claim before determining if the claim complies with each statutory requirement for patentability. (Emphasis in original.)

MPEP § 2106, 8th Ed., Rev. 5, p 2100-6 (August 2006).

The MPEP further requires:

>USPTO< personnel are to correlate each claim limitation to all portions of the disclosure that describe the claim limitation. This is to be done in all cases>, regardless of whether< the claimed invention is defined using means or step plus function language. The correlation step will ensure that *>USPTO< personnel correctly interpret each claim limitation.

The subject matter of a properly construed claim is defined by the terms that limit its scope. (Emphasis added.)

MPEP § 2106, 8th Ed., Rev. 5, p 2100-7, (August 2006).

Applicant respectfully notes that in view of this correlation of elements, the Examiner is permitted to interpret the claims broadly. However, the MPEP and the courts put specific limitations on the breadth of such an interpretation. Specifically,

CLAIMS MUST BE GIVEN THEIR BROADEST REASONABLE INTERPRETATION

During patent examination, the pending claims must be "given their broadest reasonable interpretation consistent with the specification." (Emphasis Added.)

MPEP § 2111 8th Ed. Rev. 5, p 2100-37 (August 2006).

With respect to means plus function claims, the MPEP is even more specific as to what must be done in the claim interpretation:

**>Where means plus function language is used to define the characteristics of a machine or manufacture invention, such language must be interpreted to read on only the structures or materials disclosed in the specification and "equivalents thereof" that correspond to the recited function. (Emphasis Added).

MPEP § 2106, 8th Ed., Rev. 5, p 2100-7, (August 2006).

The specification explicitly provides in part:

[0015] In accordance with one embodiment of the present invention, the components, process steps, and/or data structures may be implemented using various types of operating systems (OS), computing platforms, firmware, computer application programs, computer languages, and/or general-purpose machines. The method can be run as an application programmed process running on processing circuitry. The processing circuitry can take the form of numerous combinations of processors and operating systems, or a stand-alone device. The process can be implemented as instructions executed by such hardware, hardware alone, or any combination thereof. The software may be stored on an application program storage device readable by a machine.

[0016] In addition, those of ordinary skill in the art will recognize that devices of a less general purpose nature, such as hardwired devices, field application programmable logic devices (FPLDs), including field application programmable gate arrays (FPGAs) and complex application programmable logic devices (CPLDs), application specific integrated circuits (ASICs), or the like, may also be used without departing from the scope and spirit of the inventive concepts disclosed herein.

[0032] Figure 2 depicts a block diagram of a computer system 200 suitable for implementing aspects of the present invention. As shown in FIG. 2, system 200 includes a bus 202 which interconnects major subsystems such as a processor 204, an internal memory 206 (such as a RAM), an input/output (I/O) controller 208, a removable memory (such as a memory card), an external device such as a display screen 210 via display adapter 212, a roller-type input device 214, a joystick 216, a numeric keyboard 218, an alphanumeric keyboard 218, directional navigation pad 226 and a wireless interface 220. Many other devices can be connected. Wireless network interface 220, wired network interface 228, or both, may be used to interface to a local or wide area network (such as the Internet) using any network interface system known to those skilled in the art.

[0033] Many other devices or subsystems (not shown) may be connected in a similar manner. Also, it is not necessary for all of the devices shown in FIG. 2 to be present to practice the present invention. Furthermore, the devices and subsystems may be interconnected in different ways from that shown in FIG. 2. Code to implement the present invention may be operably disposed in internal memory 206 or stored on storage media such as removable memory 222, a floppy disk or a CD-ROM.

Clearly, the claims were not read in view of the requirements of the MPEP and at least the above description, because to conclude that the claims recite software per se not only ignores the claim language, e.g., software per se cannot receive anything, it is inanimate, but also the above description and the requirements of the MPEP. Further, the rejection picks and chooses elements from the description and apparently ignored the description that demonstrated that the rejection is not well founded. Nevertheless, as an expedient to move prosecution forward and not to be interpreted as an admission that the rejection has merit, in

view of at least the above description, Claims 31 to 37 have been amended to include a processor and a memory. Applicant respectfully requests reconsideration and withdrawal of the § 101 rejection of each of Claims 31 to 37.

§ 102 Rejections

Claims 1, 2, 4, 16, 17, 19, 31, 32, 34, 46, 47 and 49 stand rejected under 35 U.S.C. § 102(b) as anticipated by U.S. Patent Application Publication No. 2004/0003264, hereinafter referred to as Zeman.

The rejection of Claims 1, 16, 31 and 46 relied upon healing table 600 as teaching exactly the dispatch table of these Claims. However, Applicant respectfully notes that for an anticipation rejection, it is not sufficient for a reference to teach some method of executing an obfuscated application program. Rather, the MPEP requires that Zeman must show each limitation in the same level of detail and arranged as required by the claim. MPEP § 2131, 8th Ed., Rev. 5, p. 2100-67 (August 2006).

The rejection has failed to demonstrate that Zeman satisfies this requirement. The rejection failed to cite any teaching of "at least one instruction opcode value encoded using one of a plurality of instruction set opcode value encoding schemes." Rather, the rejection simply asserts "Sometime before an obfuscated function is called it must be deobfuscated." While this may be true, it fails to teach that the opcode instruction value was "encoded using one of a plurality of instruction set opcode value encoding schemes." The rejection has failed to cite any teaching of at least two **instruction set** opcode value encoding schemes. Accordingly, the rejection has failed to demonstrate that Zeman teaches the invention in the same level of detail as recited in these Claims, because there has been no demonstration that the opcode value encoding in Zeman is one of a plurality of instruction set opcode value encoding schemes. Therefore, Zeman fails to anticipate these claims.

Applicant respectfully requests reconsideration and withdrawal of the anticipation rejection of each of Claims 1, 16, 31 and 46.

The anticipation rejection of Claims 2, 17, 32 and 47 relies upon a modification of Fig. 8 of Zeman. Zeman taught, "[0018] Fig. 8 is a flow diagram of an exemplary code obfuscation process." The rejection has failed to cite any teaching that any of the operations in the exemplary code obfuscation process is performed in response to receiving an obfuscated application program as recited in these claims.

In fact, the rejection requires a modification by taking a step from a process used to obfuscate code and then using that step after the obfuscated code is received. This cannot be done in an obviousness rejection and so cannot form the basis for an anticipation rejection. Thus, Claims 2, 17, 32 and 47 distinguish over Zeman for reasons in addition to those given above, and incorporated herein by reference, for Claims 1, 16, 31 and 46. Applicant respectfully requests reconsideration and withdrawal of the anticipation rejection of each of Claims 2, 17, 32 and 47.

The rejection of Claims 4, 19, 34 and 49 relied upon healing table 600 as teaching exactly the dispatch table of Claims 1 and 31. However, Applicant again respectfully notes that for an anticipation rejection it is not sufficient for a reference to teach some method of executing an obfuscated application program. Rather, the MPEP requires that Zeman must show each limitation in the same level of detail and arranged as required by the claim. MPEP § 2131, 8th Ed., Rev. 5, p. 2100-67 (August 2006).

The rejection has failed to demonstrate that Zeman satisfies this requirement. The rejection failed to cite any teaching of "at least one instruction opcode value encoded using one of a plurality of non-standard instruction set opcode value encoding schemes." The rejection relies on an XOR operation on healing table 600, but this fails to teach that the opcode instruction value was "encoded using

one of a plurality of non-standard instruction set opcode value encoding schemes."

The rejection has failed to cite any teaching of at least two non-standard **instruction set** opcode value encoding schemes. Accordingly, the rejection has failed to demonstrate that Zeman teaches the invention in the same level of detail as recited in Claim 4, 19, 34 and 49, because there has been no demonstration that the opcode value encoding in Zeman is one of a plurality of non-standard instruction set opcode value encoding schemes. Therefore, Zeman fails to anticipate these claims. Applicant respectfully requests reconsideration and withdrawal of the anticipation rejection of each of Claims 4, 19, 34 and 49.

Claim 5, 6, 20, 21, 35, 36, 50 and 51 stand rejected under 35 U.S.C. § 102(e) as anticipated by U.S. Patent No. No. 6,694,435 hereinafter referred to as Kiddy.

The rejection of Claims 5, 20, 35, and 50 stated in part:

transforming said application program code into transformed application program code that uses one of a plurality of opcode value encoding schemes of a dispatch table associated with said application program(e.g., col. 5, lines 45-67 and col. 6, lines 1-47);

Applicant respectfully traverses the anticipation rejection of each of Claims 5, 20, 35, and 50. Applicant respectfully notes that for an anticipation rejection it is not enough that Kiddy describes a method of obfuscation, but rather, according to the MPEP, Kiddy must show each limitation in the same level of detail and arranged as required by the claim. MPEP § 2131, 8th Ed., Rev. 5, p. 2100-67 (August 2006). Kiddy, Col. 5, lines 45 to 67 taught:

FIG. 5 shows a block diagram of an obfuscation method according to one embodiment of the present invention. Operations 512 and 522, corresponding to operations 419 and 429 in FIG. 4, break the operative instruction

streams into parts. After the instruction streams are broken into parts, the parts are optionally transformed in operations 514 or 524. **The optional transformations may involve reversing loops, expanding loops, flow transformation, renaming identifiers, changing the usage of variables, eliminating or substituting instructions, etc.** Finally, the optionally transformed parts are interleaved into a new obfuscated instruction stream in operation 532. In other embodiments of the present invention, optional transformations may also take place before the virtual machine instruction streams are broken into parts. (Emphasis Added).

While FIG. 5 shows an example of interleaving two instruction streams into an obfuscated stream, multiple instructions streams can be interleaved into a single obfuscated instructions stream according to the present invention. FIG. 6 shows an example where three streams of computer instructions are interleaved.

This section includes a laundry list of optional transformations and then interleaving of the parts. However, this laundry list and interleaving fails to show each limitation in the same level of detail and arranged as required by the claim, because a dispatch table as recited in the Claim is not taught. Similarly, techniques for interleaving fail to teach the recited dispatch table. Applicant respectfully requests reconsideration and withdrawal of the anticipation rejection of each of Claims 5, 20, 35, and 50.

Applicant respectfully traverses the anticipation rejection of each of Claims 6, 21, 36 and 51. Each of these claims distinguishes over Kiddy at least for the same reasons as the independent claim from which it depends. Applicant respectfully requests reconsideration and withdrawal of the anticipation rejection of each of Claims 6, 21, 36 and 51.

§ 103 Rejections

Claims 3, 7, 18, 22, 33, 37, 48 and 52 stand rejected under 35 U.S.C. 103(a). Applicant respectfully traverses the use of Official Knowledge with respect to Claim 3. Claim 3 does not recite simply a table, but rather a

specific table. Therefore, the official knowledge must be specific to dispatch tables and not tables in general. Further, there is no basis for asserting that one of skill in the art would apply a general table to Zeman, because Zeman teaches a single table that is sent with the code. There has been no showing of why additional tables would be needed or how the invention of Zeman would work with multiple tables. Nevertheless, assuming that the combination of references is correct for each of these claims, the additional material relied upon from the secondary reference does not correct the deficiencies of Kiddy with respect to the independent claims from which these claims depend. Therefore, each of Claims 3, 7, 18, 22, 33, 37, 48 and 52 distinguish over the combination of references for at least the same reasons as the independent claims. Applicant respectfully requests reconsideration and withdrawal of the obviousness rejection of each of Claims 3, 7, 18, 22, 33, 37, 48 and 52.

Provisional Double Patenting Rejection in View of U.S.
Patent Application Serial No. 10/672,183.

The rejection stated in part "claims 1-48 of the copending application contain all the limitations of claims 1 to 7, 16 to 22, 31 to 37 and 46 to 52 of the instant application." This is incorrect. For example, Claim 1 in U.S. Patent Application Serial No. 10/672,183 recites using a current instruction counter value. The claims in the instant application do not require such a value, and the rejection has failed to cite any teaching or suggestion in the claims of either application for eliminating the use of the instruction counter value. Therefore, the premise in the rejection that all limitations are found in Claims 1 to 48 of U.S. Patent Application Serial No. 10/672,183 is incorrect. It is the claims that must be compared and such a comparison shows that the instant application includes limitations that are neither suggested nor disclosed by the

claims in U.S. Patent Application Serial No. 10/672,183. Accordingly, the obviousness double patenting rejection of Claims 1 to 7, 16 to 22, 31 to 37 and 46 to 52 is not well founded. Applicant respectfully requests reconsideration and withdrawal of the provisional obviousness-double patenting rejection of Claims 1 to 7, 16 to 22, 31 to 37 and 46 to 52 in the instant application in view of Claims 1 to 48 in U.S. Patent Application Serial No. 10/672,183.

Provisional Double Patenting Rejection in View of U.S.
Patent Application Serial No. 10/673,021.

The rejection asserts that the Claims in U.S. Patent Application Serial No. 10/673,021 include all the limitations of the instant application. This is in error and the rejection has simply reduced the claims to a gist. For example, the claims in the instant application utilize a dispatch table and a plurality of instruction set opcode value encoding schemes. Claim 1 of U.S. Patent Application Serial No. 10/673,021 recites:

receiving an application program that
comprises application program instructions and
application program data;

determining an application program
instruction location permutation to apply to a
current instruction counter value;

determining an application program data
location permutation to apply to a current data
location counter value;

receiving said current instruction counter
value;

applying said application program instruction
location permutation to said current instruction
counter value to obtain a first reference to an
application program instruction in an instruction
stream to execute;

if said application program instruction
references application program data, applying said
application program data location permutation to
data referenced by said application program
instruction to obtain a second reference to data
to access, said data to access interleaved with


application program instructions in said instruction stream; and
executing said application program instruction.

There is no teaching or suggestion of a dispatch table. Rather, this claim is directed to modifying a current instruction counter value and using the value to reference an instruction in an instruction stream. The claims in the instant application do not recite anything concerning an instruction counter value, and permuting an instruction counter value teaches nothing about determining a dispatch table. Accordingly, the provisional obviousness-type double patenting rejection is not well founded. Applicant respectfully requests reconsideration and withdrawal of the provisional obviousness-double patenting rejection of Claims 1 to 7, 16 to 22, 31 to 37 and 46 to 52 in the instant application in view of the Claims in U.S. Patent Application Serial No. 10/673,021.

Claims 1 to 63 remain in the application. Claims 31, 34 and 35 have been amended. For the foregoing reasons, Applicant(s) respectfully request allowance of all pending claims. If the Examiner has any questions relating to the above, the Examiner is respectfully requested to telephone the undersigned Attorney for Applicant(s).

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on July 19, 2007.



Attorney for Applicant(s)

July 19, 2007
Date of Signature

Respectfully submitted,



Forrest Gunnison
Attorney for Applicant(s)
Reg. No. 32,899
Tel.: (831) 655-0880